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ABSTRACT

As a continuation of a study of economic returns on investment in selected occupational programs in New York State, this report examines the reasons for the differential rates of return to program graduates and offers recommendations for maximizing graduate returns on investment. Section I provides an introduction to the purposes and objectives of the study, study methodology, and the conclusions of the prior research effort. Section II presents the results from interviews with a sample of employers conducted to determine factors associated with higher salary yields. Information was gathered on job requirements, criteria for employee selection, sources of qualified candidates, the use of contractual education, cooperative education opportunities, and employer participation on curriculum advisory committees. Section III focuses on the results of interviews at selected schools, which concentrated on recruitment procedures, placement support activities, curriculum advisory councils, cooperative education programming, and monitoring/evaluating activities. Section IV offers an examination of environmental and programmatic factors associated with graduate yields and discusses program strategies to maximize yields. A synthesis and summary of recommendations is presented in section V, highlighting the roles of employers, placement offices, and faculty; and ways of strengthening linkages between placement offices and employers, students, alumni, and faculty. Questionnaires are appended. (HB)

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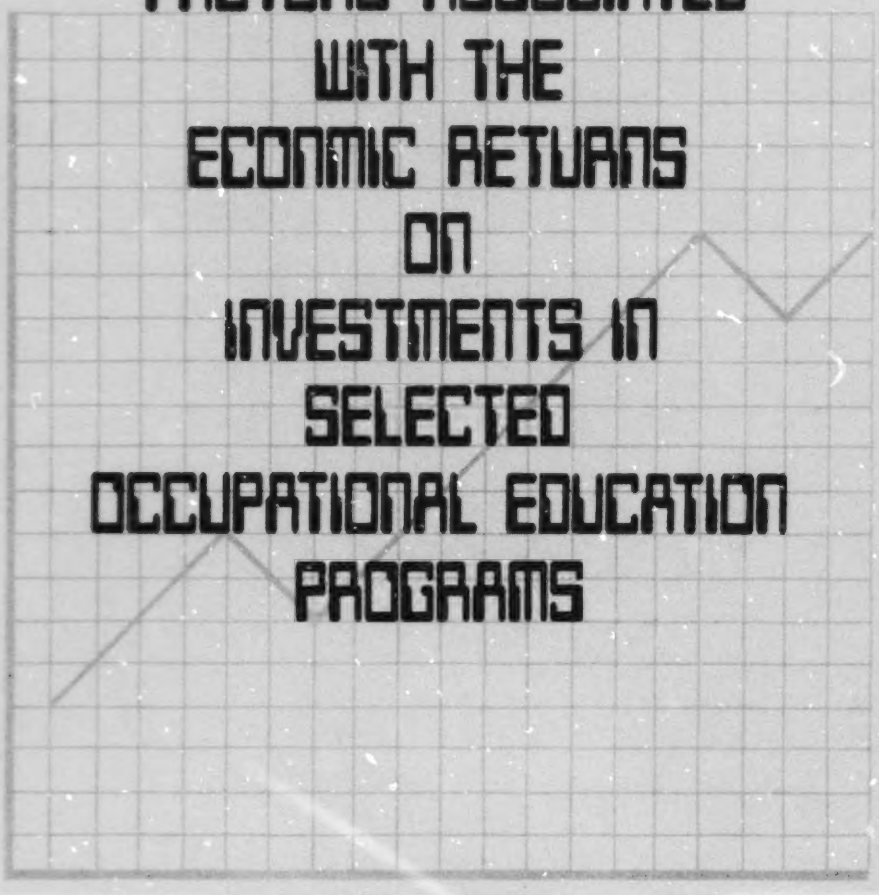

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FACTORS ASSOCIATED WITH THE ECONOMIC RETURNS ON INVESTMENTS IN SELECTED OCCUPATIONAL EDUCATION PROGRAMS

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Submitted by:

Monroe Community College
1000 East Henrietta Road Rochester, NY 14623

Project Staff

Monroe Community College
Dr. Edward Mills,
Project Director
Sherrill Ison,
Research Assistant

Center for Governmental Research Inc.
Jeffrey Smith,
Principal Research Analyst
Margaret Raymond,
Senior Statistical Res. Methodologist

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I. INTRODUCTION

This report represents a continuation of a prior examination of the economic returns on investment in selected occupational education programs in New York State. The first study quantified the level of investment and return on investment in two-year education experienced by graduates, employers, and the government in New York State--in the disciplines of data processing, engineering/mechanical, business/commerce and health science. This research examines the reasons for differential rates of return to the graduate and offers recommendations for maximizing graduate returns on investment.

Purpose/Objective

The overall purpose of this study was to obtain quantitative and qualitative data from a statewide sample of New York State employers and two-year colleges in order to: (1) identify variables which explain the variance in the level of return from investment in post-secondary education, and (2) develop strategies which, if implemented, will help maximize the return from such investment in the future. Specifically, the project objectives included the collection and analysis of employer and school data, in the above disciplines, as follows:

1. Additional employer information was to be obtained from selected employers which were included in the first year's statewide sample of employers with 100 or more employees. Such information included organizational, programmatic, and environmental variables which were suspected to contribute to high/low returns of post-secondary education.

2. School information was to be acquired from selected schools which were included in the first year's statewide sample. Similar to employer data this information would include variables which may be related to high/low returns for employers and for graduates of two-year technical training programs in New York State.

3. The analysis of the data, in order to depict the principal variables related with high/low levels of return from post-secondary education, and to suggest policy implications of such findings.

Study Methodology

Findings of this study were based on in-depth case study of a sample of employers and schools which participated in the first year of study. Selection of employers was based on the presence of significantly higher or lower than average salary yields for two-year graduates. Schools were selected based on their proximity to sample employers. In-depth telephone and field interviews were conducted in an attempt to identify explanatory factors for high/low graduate salary and placement yields. Copies of the instruments used in the study are included in the appendix.

Graduate placement yield measures (percent employed and percent placed) were determined for each school (by discipline, and overall) and environmental and programmatic factors were examined in relation to comparative yields in order to draw inferences from identified associations. Based on this assessment, specific factors that affect placement were identified and school procedures which help maximize yields were recommended.

Study Context--Conclusions of the First Year Study

It is commonly assumed that investment in post-secondary education will not only increase an individual's employability but also provide the graduate with a respectable economic return (received from higher future wages). The findings from the first phase of study cast doubt on the latter assumption, suggesting that, in the short run at least, returns on investment may not justify the investment in some disciplines.

It can be concluded from the first phase study that active participation between employers and two-year public schools is necessary in order to serve current and future technical needs of employers within New York State. In order for this to occur it is encumbant upon employers to articulate their needs to two-year schools in the state and for the schools to respond to those needs within the resources available. To the extent that employers benefit, the graduate will maximize their return from investment in post-secondary education. Currently, there are indications that there not only may be misalignment of employer demand and graduate supply among selected disciplines, but there also may be misalignment within disciplines between the employers' technical needs and the curriculum provided by the two-year schools.

Since resources for post-secondary education are limited, it is imperative that there is an efficient allocation of school training efforts. Employers and schools should be expected to continue in their attempts to maximize graduate, employer, and state returns from investment in two-year education. It is particularly important to increase the effectiveness of training since post-secondary education may become a prerequisite for employment, regardless of the graduate return on investment.

II. EMPLOYER INTERVIEWS

As part of the continuation of research on the return on investment in selected post-secondary disciplines, additional information was obtained from a sample of employers. Employer hiring practices were examined on a case study basis to gain a better understanding of factors that were associated with higher salary yield.* The procedures that were followed in conducting the employer case studies and the findings that resulted are presented in this section. Specific areas of inquiry included job requirements, criteria for employee selection, sources of qualified candidates, the use of contractual education, cooperative education opportunities, and employer participation on curriculum advisory committees. Findings of the information provided by employers are presented in summary so as not to identify any respondent. Implications of the findings are reserved to the Conclusions section of the paper where they are presented within the context of potential areas of concentration for two-year post-secondary schools.

Methodology Used in Employers Case Study

The critical feature of the selection process was that the employers chosen for follow-up were found to be either significantly higher or lower than the group average with respect to the average salary paid for a technical employee over a non-skilled position in a given discipline. A two-phase process was employed to develop a better understanding of employer preferences

*Salary yield was defined as the proportional difference within a firm between a position routinely requiring post-secondary education or comparable skill and a position requiring no such training.

and practices. An initial group of approximately 20 employers chosen from the sample used in the first year were selected according to the methodology described in the Appendix. Preliminary conversations were held with each based on the data they provided on questionnaires distributed during the first year of research. Specific information about job requirements, potential for advancement, prior experience, salaries, availability of adequately prepared labor and the need for supervision was solicited from each employer through telephone contact. Their responses were synthesized to yield the research questions for in-depth case study of a smaller subset of those contacted. Field interviews were conducted with nine employers; eight were ultimately included in the study. The information from employers was then analyzed and is presented in the following sections.

Caution should be advised concerning inferences drawn from the findings from employer interviews. Although selection of firms included consideration of such factors as geographic distribution and discipline-of-hire, representativeness to all New York State firms employing more than 100 persons cannot be assured because of the small number of cases. The case study approach used for this phase of research offers the chance for a more in-depth observation of fewer numbers of employers. The tradeoff of statistically sound inference to a population can be justified on the basis of the quality and quantity of additional information obtained from the case study firms.

Findings from Employers

Telephone Survey Findings

The preliminary conversations held with selected employers around the state resulted in a better understanding of the factors that bear on the value

placed on technical positions within the firm, as measured by salary levels. Each employer was expected to have a frame of reference by which the relative and absolute worth of a position was evaluated. At one extreme the frame of reference could be a completely internal evaluation that estimated the contribution of a position (or the skills the position would represent) only in terms of its contribution to the overall scheme of production--and in comparison to salaries of others already there. At the other end of the spectrum, a purely external evaluation would consider only the value that other employers assign to a position or its skills. Most employers were expected to fall between the two extremes; that is, they would evaluate the worth of a position (and hence the salary they would be willing to pay) on the basis of both internal and external considerations.

Employers were expected to indicate that several variables were important in contributing to an evaluation of a position and the subsequent salary offering. Technical skill was anticipated to be the largest component in an employer's calculus. Potential or interest in advancement was also expected to be significant. Prior experience in related work was thought to be of secondary importance, as would be the need for additional or specialized training and the need for supervision. Finally, scarcity of supply of qualified candidates was thought to be important. Of the factors mentioned, only the scarcity of supply is considered as a purely external consideration, the remaining factors are internal or a combination of internal and external.

Preliminary conversations with employers whose salary yields for technical positions deviated significantly from the discipline average revealed that employers are not exact in their considerations. With the exception of large corporations who support a large internal bureaucracy for

developing and applying strict decision criteria, most employers prefer a flexible approach to establishing the value for a given position. As a result, only general tendencies among employers could be discerned.

Surprisingly, the telephone contacts indicated a greater attention to external rather than internal factors in measuring the worth of a position. Skills appeared to account for only a small portion of their decision equation, in contrast to the stated hypothesis. Employers found it difficult to distinguish between skills and experience, but appeared to rank experience (i.e., skills developed at someone else's expense) above technical skill. However, on repeated questioning, it became clear that most employers equated the two factors. Several other internal considerations were identified by the contacts as influential in establishing the value an employer is willing to afford a position. Salaries paid to higher or lower ranked positions were cited often, as was seniority of other workers (in both technical and entry-level positions). Corporate policy, based on internal comparisons of positions, was mentioned only by employers in large companies.

The majority of employers contacted, however, pointed to external factors as influences on establishing salary levels. Industry practice was mentioned frequently, particularly among firms who were able to readily make comparisons for a specific position or a set of skills. Geographic location was indicated to be influential with respect to recognized cost of living differences. Union stipulations for technical or entry-level jobs or civil service requirements were identified as constraints on the latitude an employer might exercise in establishing salary levels.

The major determinant of salaries, as revealed through our telephone contacts, appear to be the relative supply of qualified applicants with minimum or higher levels of the required background. In fields where technically trained workers were readily available, rather than raise the requirements of a position to obtain a higher quality employee, employers almost universally lowered the salary offering, regardless of the amount of skills training required to qualify for a technical position. Likewise, salaries were raised in response to low supply levels, rather than undertake special efforts to train in-house. The fluctuations of salary were found to be most prevalent in the fields of data processing and business/commerce, although cases did exist in health sciences and engineering/mechanical as well.

In response to direct questioning on the utility of an associate degree in an appropriate technical field, most employers indicated that if they considered education as a criterion for employment, it was used as a minimum screening device. This attitude was most prevalent among large employers and others whose technical positions are in fields that are currently oversupplied. In both cases, it is presumed that such employers would receive many applications for each technician vacancy.

The initial contacts were intended to identify specific areas for further research with employers. As such, the lack of conclusiveness in some areas was helpful in directing future effort. No clear picture emerged from the preliminary contacts about the impact of general basic education, work habits and attitude. The difference between experience and both skills and maturity also represented an area needing further clarification and

definition. The major conclusion that arose from our discussions was that employers in general are short-sighted in their hiring practices. Decisions to hire are based on limited information; employers appear to look at an immediate need and search to satisfy it with the minimum outlays necessary. This simplistic cost-benefit does not consider future returns on investment, or discounts them heavily.

As a result of the preliminary work, it became clear that additional effort would be required to clarify employers' hiring preferences. The following areas were chosen as those needing the most attention or as potentially offering the best opportunity to identify factors that influence the employer in hiring technically trained workers:

- o experience vs. maturity
- o skill vs. experience
- o technical vs. basic education
- o preference for and utility of hiring sources
- o details of employer-school linkages

Employer Follow-up Visits

To clarify information obtained through telephone contacts with selected employers in New York State regarding both their hiring preferences and the nature and extent of relations with local two-year post-secondary schools, field interviews were conducted with several of those employers interviewed earlier via phone. Employers were chosen for additional interviewing on the basis of geographic location, the relative position of the firm with respect to salary yields for each discipline, and information obtained through earlier contacts. Given the small number of in-depth interviews to be conducted, attempts were made to ensure that employers would be selected in each of the four disciplines of study and the appropriate areas of school-employer relations.

The interviews were designed to cover four discrete areas, briefly described below:

- o description and ranking of qualifications required for an average benchmark technical job, selected in a field where employers' salary yield differed significantly from the sample average;
- o assessment of the importance of a variety of factors in making a hiring decision for a technical position (e.g., basic education, work habits, maturity, related work experience, etc.);
- o identification and assessment of sources for qualified applicants, including quality and consistency of applicants from each source, the convenience and cooperation of each source and the impact of cooperation on a hiring decision;
- o details, if applicable, on the employer's participation in contractual education, cooperative education or curiculum advisory councils.

Interviews were conducted with nine employers lasting from 20 minutes to three hours. One interview was deleted from analysis; eight were judged to be sufficiently complete for inclusion.

Job Requirements. Each employer was asked to furnish a job description showing the necessary requirements for a benchmark position in the discipline that showed significant deviation from the sample average. The job description was typically used for announcing the availability of the position, and was expected to specify the critical criteria for qualification. The description and ranking of the requirements for the benchmark technical job were compared and analyzed. Because the job positions under study were from widely varying fields, direct comparison of specific responsibilities was impossible. Instead, job requirements that detailed the technical aspects of the position were deemed as "Skill in Area." Those relating to reading,

computational or writing abilities were grouped as "Basic Education." "Experience in similar position" and "skill in area" were listed most frequently as a requirement for the benchmark position. Several other factors were mentioned as well: analytic ability, basic education accountability, judgment and a two-year secondary degree were among those mentioned.

More illuminating, however, is the rank ordering of the job requirements. Each respondent was asked to rank in order of importance the job requirements for the benchmark position. As shown in the table below the majority of respondents ranked skill as the primary factor in the set of requirements. Experience in the field was never ranked as the most important requirement. Other factors identified as of prime importance included analytic ability, judgment and a two-year post-secondary degree. These findings suggest that overall, employers consider technical skill more crucial than experience in the field, as indicated by explicit job requirements.

Frequency of Requirement by Rank

Job Requirement	Ranking of Requirement 1	2	3	4
Analytic Ability	1			
Basic Education		1		
Skill in Area	5	1	1	
Experience in Area		3	3	
Accountability		1		
Motivation				1
Appearance		1		
Judgment	1		1	
Work Independently				1
Maturity			1	
Two Year Degree	1	1		

NOTE: Value represents the number of respondents who ranked requirement in a given position.

Criteria for Employee Selection. Each employer was asked to evaluate a variety of factors suggested in the literature as being important in making a hiring decision. Each respondent was asked to rate each factor as essential, very important, somewhat important, not important, or not used in considering a candidate's qualifications for the benchmark position discussed above.

This section of the interview sought to measure the relative importance of education, experience, and personal background on an employer's hiring decision for technical positions. The pre-established criteria that employers were asked to evaluate were selected in response to discussion in the literature about employer preferences and in part as a result of the earlier discussions with employers. Nine factors were chosen for employer rating. Education factors included technical skill and basic education (the 3 R's). Work habits, attitude, maturity, and communication skills were characteristics of a candidate's personal background that were thought to be important. The component of experience was divided into three factors: length of prior experience, appropriateness of prior experience and the employer's estimation of how long it would take a candidate, once hired, to become a fully productive employee. The last factor, the anticipated length of the new employee's learning curve, was expected to be distinct from either education or prior employment and reflect, at least in part, the change in work environment.

The ratings of essential, very important, somewhat important and not important were assigned normative ratings of one through four, respectively; the sum of the numeric rating was then averaged over all respondents who used

the criterion in their decision-making. Thus higher average scores indicate less important ratings by respondents. The table below presents the average score for each factor as well as the relative rank of each factor.

Rank	Criterion	Average Score
1	Technical Skill	1.75
2	Communication Skill	1.87
3	Basic Education Skill	2.00
5	Work Habits	2.25
5	Attitude	2.25
5	Appropriateness of Prior Experience	2.25
7	Maturity	2.50
8	Length of Prior Experience	2.57
9	Anticipated Length of Learning Curve	2.67

*Essential = 1, Very Important = 2, Somewhat Important = 3, Not Important = 4

The average scores indicate that technical skill was ranked most important. This result is consistent with the ranking of job requirements done by employers for the benchmark positions. The average score of 1.75 indicates that employers considered technical skill to be between very important and essential to their decision. The consistency of ratings across respondents both in ranking job requirements and in evaluating selection criteria indicate that for positions that require specific training, technical skill is the major attribute employers want.

The results of the average scores identified communication skills to be the second most important factor. This was surprising, since no employer mentioned it as a job requirement. Basic education skills ranked a close third with an average score of 2.0, indicating that employers consider the 3 R's to be very important in their deliberations. These findings suggest that a well-rounded candidate will be viewed as more desirable than one with technical skill alone.

Experience factors were rated by most employers as less important than education or personal background. Appropriateness of prior experience rated a 2.25 average score, appearing fourth behind technical skill, communication skill and basic education (Because of a three-way tie in scores, the factor was given a rank of five.) The other two experience criteria, length of prior experience and the anticipated length of the learning curve ranked eigth and ninth out of nine factors. While the absolute scores of the experience criteria suggest they are at least somewhat important, the findings presented here illustrate clearly that employers weigh other factors more heavily.

The results of the independent ratings of employment criteria discussed above initially appear to contradict the results of the job requirement rankings--particularly in terms of the relative importance of experience. Several possibilities exist which could explain the differences. First, the method of ranking requirements does not consider the relative distance between an initial and subsequent choices--experience may or may not be a "distant second" compared to skill. Since the rankings were based only on the criteria that the companies themselves used, the additional factors described in the employment criteria were not considered in direct contrast to the job requirements. Second, the job requirements might best be considered a pre-screening tool. Presumably an employer would interview and, therefore, apply the evaluative employment criteria to only those applicants who met the stated job requirements. Thus the criteria could be viewed as a more comprehensive evaluation of a more homogeneous group of individuals, in which case experience may be viewed as relatively less important than other factors.

The ratings of employers were further examined to see if significant differences in responses were related to employer size of firm and discipline of benchmark position. No significant differences by discipline were revealed. When firms were divided into groups of small firms (under 500 employees) and large firms, several distinctions became apparent. Small firms and large firms each rated technical skills the same, but small firms rated basic education as slightly more important than technical skills. Factors of personal background (work habits, attitude, maturity and communication skills) were all considered significantly less important by small firms than by large ones. Finally, length of prior experience was more highly valued by small firms. These results support the notion that small employers require more than just technical proficiency in their employees, whereas large firms have the volume to permit specialization in their work force. Because small employers have less internal capability to train employees in the skills they require, experience is more highly rated than in large firms.

These results suggest several important implications. Technical skills are rated as more important than experience, regardless of size of firm. In addition, the findings support the writings of others that recommend that essential preparation for work must include (in addition to technical competence) basic education, generic job skills and communication training. Given that employment projections point to the bulk of employment remaining in large companies (in spite of rapid expansion in small firms), the majority of technical positions will presumably require a complement of technical and non-technical skills. Curriculum planners and placement officers face the challenge of assuring that technical adequacy will accompany solid basic education and job readiness in the graduates they will produce in the years ahead.

Sources of Qualified Candidates. Each respondent was given a list of places that could potentially supply qualified job applicants for the benchmark technical positions. The source list consisted of the following:

- o referrals
- o local advertising
- o walk-ins
- o transfers
- o community colleges
- o agriculture and technical schools
- o public employment agencies
- o proprietary vocational schools
- o BOCES
- o high schools
- o four-year colleges
- o unions
- o national advertising

Employers were asked how frequently each source was used to supply candidates. In addition, respondents rated the sources in terms of the consistency of skill preparation and in terms of overall quality of preparation. Details on the quality ratings were obtained through subsequent open-ended questions. The extent of cooperation by each recruitment source was rated and described, as well as the extent to which helpfulness influenced an employer to use the source or hire its candidates.

Recruitment and hiring sources were grouped into primary and secondary sources on the basis of the responses of the employer. Community colleges were indicated as primary sources by half of the respondents. Agriculture and technical colleges were mentioned as a primary source in one case; in four others it was ranked as a secondary source. A review of the sample of employers helps explain this further. The recruitment patterns of A&T schools and the size of the respondent firms may in part account for the findings. Since A&T's search more widely for recruiters and since firms that

could afford the travel and recruitment expense would tend to be large, the smaller firms included in a sample would be unlikely to rate A&T schools as primary sources of candidates.

Both community college and agricultural and technical candidates were judged to be consistently prepared by the large majority of interviewed employers who reported enough use of schools to be able to speak to their candidates' readiness. Differences in ratings of the quality of preparation were found--large firms rated CC's more highly than smaller firms. This finding parallels a study conducted by the Los Angeles Chamber of Commerce that indicated that technical education was found to be more directed to the needs of larger employers than small.[1]

Support for the preliminary assessment that employers sought simple solutions to their hiring needs resulted from the analysis of recruitment sources. Walk-ins, public employment agencies and local advertising were found to be used frequently by most employers. Employers generally rated quality of preparation among these convenient sources as low to moderate. Consistency was found to be variable. Of particular surprise is that the employers who used these sources the most frequently were the same who mentioned that each source produced a wide spectrum of applicants--that those individuals who made the referrals lacked an understanding of the needs of employers, and public employment agencies faced the wrong incentives to provide selective referrals to employers. In spite of the evaluation of consistency

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1 Wilms, Wellford W., "Technology, Job Skills, and Education: A Reassessment of the Links," Los Angeles Chamber of Commerce, January 1983.

and quality of preparation of candidates from these low- or no-cost sources, employers must continue to rely on these variable sources since experienced workers use these sources more than others.

Four-year colleges were reported to be frequently used by 25 percent of the respondents. Candidates from four-year schools were perceived to be highly qualified in their course preparation. Four-year schools were rated moderately to very consistent in producing qualified applicants. In addition, schools were noted as being fairly helpful which was modestly influential. Additional comments indicated that since four-year graduates were willing to accept technical positions (in effect, to be underpaid) and because some schools attempted to match referrals to the employers' needs, four-year schools presented an attractive alternative to other recruitment sources.

Three of the eight respondents reportedly used intra-company transfers as an occasional source. This option was rated by all who used it as an excellent option; the candidates must have their former managers' recommendations. As a result, candidates from this source tend to be highly screened--those that are allowed to transfer are generally high achievers. Reliable information on past job performance is also available. The details provided by respondents suggest that transfers represent a reliable and low-cost means of locating qualified and experienced candidates for technical positions. It should be noted that because graduates of two-year technical training programs generally prefer to remain in their original geographic locale, transfers between geographically distant divisions of the same company would most likely appeal to only a few technical employees. Additionally, transfers would be restricted to large employers; thus the majority of employers would not have this source available to them.

Looking at the ratings and comments of the interviewed employers across all the sources for recruiting or hiring, several tendencies emerge that have important implications for school-based initiatives for recruitment and placement. The findings support the earlier suggestion that employers use sources that have been convenient, even if the source produces low results or results with low quality. The opportunity exists then for community college placement offices to show employers how convenient two-year schools can be as a source. Helpfulness on the part of those making the referral, such as schools, is acknowledged and does influence an employer to use the source again. The major advantages of community college and agricultural and technical sources were reported to be the match of skills to needs, the hands-on experience graduates have and the willingness of some schools to restrict interviews only to qualified students so as to increase interviewer efficiency. More active marketing of the opportunity and value of recruiting on campus could have desirable outcomes for both schools and employers.

Contract Education. Each employer was asked if, in recent time, any of his employees participated in contract education, where instruction was given by someone other than a company employee in a field relevant to the firm. Only two of the eight respondents (25 percent) provided contract education to some of their employees. Neither used it as a means to enhance their employees' career development, but rather the focus was to enhance the skills needed for the current position. In both cases, the courses were of short duration (a week to ten days) with classes of 15 or less. The course material was targeted to a narrowly defined technical area, particularly designed to introduce new machinery or routines into current production.

An area of consideration related to contract education was the effect that participation would have on both salary and promotion opportunities for employees. While the small number of cases prevents any conclusive analysis, the information provided by the two employers was consistent. When an entire department or salary level is involved in enhancing their skills, participation had no effect on salary. If only a few employees were selected to take course work, the result was to enhance their remuneration relative to those who were not selected. In all cases, however, once an employer had made the investment to improve the skills of an employee, there was a tendency to restrict promotion so as to gain as much return as possible on the investment. The one firm that had to pay for the course work to be taught estimated the cost to be roughly $100 per employee.

Contract education provides an employer a compromise choice between hiring and paying for the most current technical skills and hiring unskilled with an eye to training in-house. It is chosen as a means of enhancing skills because the courses can be tailored to an employers' needs. Contract education provided by companies selling equipment can be obtained at low or no charge. Because the employer determines when and for how long the course work will be taught, instruction can be more timely and less disruptive to production.

Cooperative Education. Based on the first year study, cooperative education was chosen as an area of additional focus. During the field interviews, employers were asked to furnish information concerning the mechanisms of coperative education programs they might have with area schools. Six of the eight firms (75 percent) had agreed to provide cooperative education opportunities to students. Of the six firms, four had

contracted with four-year colleges--these firms expressed an interest in having well-rounded students who also had a technical background. The remaining two firms looked to two-year schools because of the specific technical capabilities the firm required and the experience they could provide to students.

Reasons for providing cooperative opportunities were found to be varied. Several firms mentioned its benefit in fostering good company relations. The chance to provide hands-on experience was frequently cited, as was the corollary chance to "test-drive" potential employees. The latter reason implies that the choice of school for co-op would accurately indicate the kind of candidate sought. Only one employer admitted that co-op students represent a low-cost source of labor during the contracted period.

Administrative arrangements of successful co-op programs suggest creativity, flexibility and tenacity are necessary ingredients to ensure a program's viability. Information from schools was valuable in showing ways schools have fostered co-op programs. Schools initiated the majority of co-op arrangements. One school had two proposals turned down before the third was accepted. One program borrows line management one morning a week to be on campus for "office hours." Some schools offer to defray staff supervision costs (which are approximately five hours per week) in an effort to make the arrangement as attractive as possible. Most schools agreed to a two-year conditional program.

Most firms offer a co-op in one speciality--one firm had four going concurrently. Usually around five students are selected per program. The

proportion of participants who join the firm ranges from 20 to 60 percent. These students generally receive higher starting salaries that reflect the experience gained through co-op.

The companies interviewed all expressed satisfaction with their respective arrangements. The cost to the company was outweighed by the benefits both to the firm and to the students involved. The findings show a continuing interest in co-op by employers, contrary to the expressed perception shared by a number of educators. While the numbers of students taken into the firms is small, the willingness of the employers to be involved should not be overlooked. The prospect for expanding the number of opportunities appears to be favorable, as long as an effort is made to accommodate the needs of the employer.

III. SCHOOL INTERVIEWS

The review of school priorities which may affect graduate yields focused on (1) recruitment procedures, (2) placement support activities, (3) curriculum advisory councils, (4) cooperative education programming, and (5) monitoring/evaluation activities. The following chapter summarizes the findings of this review--providing observations regarding the seven schools included in the case study. In those cases where practices are similar a general description will be presented and exceptions will be noted; otherwise a detailed summary of the various practices by school will be presented.

Recruitment Procedures

Identifying and Soliciting Firms for Recruitment

The task of seeking out and arranging for appropriate firms to participate in on-campus recruiting varies among schools. All schools maintain a master listing of companies who have recruited at the school previously; these companies are invited by letter to participate in the annual recruitment program, and a personal phone call is typically made as follow-up to the letter. The extent to which new firms are sought out varies among schools. Some schools (N=3) concentrate primarily on firms which have recruited before and do little to solicit additional firms. These schools typically invite between 50-75 companies to recruit, principally located within their area or in other parts of New York State. Other schools (N=2) develop a fairly targeted list of new companies which have not recruited and add them to the list of companies who will receive letters of invitation. These schools invite between 180-700 companies to recruit. Finally some schools (N=2) develop a substantial list of firms all over the nation; these firms are sent a letter of invitation to recruit. These schools invite between 1,500-2,100 companies to recruit.

A variety of sources are used to develop the mailings to new firms; those that were specifically identified include Chamber of Commerce directories, College Placement Council Annual, New York Business Directory, New York Job Service, Industrial Management Council Directory, Classified Ads, and recommendations of college department heads.

Recruiting Trends

On the average, the schools each had 35 companies recruiting on campus in 1983/84. On a per graduate basis this was equivalent to one company per 42 graduates. Several schools had a company/graduate ratio of between 1:30 to 1:37, several had a ratio of between 1:53 to 1:63 and one had a ratio of 1:19.

Over time (1981/82-1983/84) the number of companies recruiting on the two-year school campuses declined 15 percent. Of the seven schools, three had modest increases in the number of firms coming to campus, two had substantial increases and two showed substantial decline in the number of companies recruiting.

A number of changes in the type of company recruiting were noted. Increased recruiting in nursing and engineering was mentioned at a number of schools; also mentioned at most schools was a noticed decline in recruiting for data processing graduates.

Location of Employers

On the average, 57 percent of the employers which recruit are located within the schools' county area; this percentage ranged from 5 percent to 99 percent for the schools, with one school close to the sample average, two

schools at ten percent or under the average, and four schools at 70 percent or over. On the average another 19 percent were from a contiguous county, 15 percent from outside the area and only 8 percent from outside the state.

Interview Procedures

Schools were found to differ in the ways in which recruitment interviews were scheduled and conducted. Four of the seven schools scheduled either group or personal interviews, depending on the employer's preference. Three schools scheduled only personal interviews stressing the importance of a two-way exchange during the interview.[1] Only one school reported any instance of pre-interviewing of candidates, though all schools surveyed applied minimum GPA criteria if the employer requested. There was less consistency among schools about making resumes of the interviewees available to a recruiter prior to an interview; a few placement officers did not want their students pre-judged on the basis of their resumes. All schools tried to make literature about the companies available to students, although often the materials the company provided were potentially too general or not geared to job candidates.[2]

Student Participation in Recruiting

Students participating in on-campus recruitment programs have been shown to receive more and better employment offers than their classmates who did not participate.[3] The extent of student participation in recruitment is

[1]Deutch, Arnold R., "Recruiting and Communications Part Two: Beyond Advertising," Journal of College Placement, Spring 1981, p. 54.
[2]Stantial, Linda, et. al., "Recruiting Literature: Is it Adequate?" Journal of College Placement, Summer 1979, p. 57-60.
[3]Rosenberg, Howard G., "Which Door Should Students Choose?" Journal of College Placement, Fall 1978, p. 63.

therefore an important measure of the effectiveness of placement efforts by the schools.

The level of student participation in the recruiting process varied widely among schools. In terms of interviews conducted with companies there was an average of 515 interviews per school conducted during recruiting--an amount equal to 42 percent of the number of graduates. The range per school varied widely from 58 interviews to 1,300 interviews--which represented between eight percent and 92 percent of the number of graduates. Five schools scheduled less than 500 interviews (ranging from eight to 37 percent of the number of graduates), while only two schools scheduled more than 750 interviews (ranging from 75 to 92 percent of the number of graduates).

Partial information was available on the number of students participating; in those schools (N=3) which had data, an average of 2.5 interviews were conducted by each student. This average can be used to estimate the number of students participating in the remaining schools; in doing this it is possible to estimate a student participation rate in each school (number of students participating vs the total number of graduates). Student participation rates for the schools range between four percent of graduating students (including transfer degrees) to an estimated 35 percent of graduates, with an average of 15 percent. Generally those schools with higher participation rates are also those with higher company per graduate ratios.

Preparing Students for Job Search

Related to the effort to bring students and prospective employers together is the way in which students are guided in their preparation for job

hunting. The search for a position represents the culmination of a process of vocation choice, technical skill development and clarification of employment preferences. During this process, there are opportunities for the student to interact both formally and informally with counselors, placement officers, and faculty. Differences in the way schools assist their students in the process of job searching were studied as they related to apparent differences in graduate yields.

In-class job hunting presentations

The way in which students were informed about placement office practices, given guidance in preparing resumes and told about recruitment opportunities varied among the seven schools visited. In six of the schools the placement office is primarily responsible for developing a graduating student's ability to secure employment. In one school, the responsibility is shared between the placement office and the academic department in certain disciplines. To reach students, the placement office in six schools initiated contact with students by giving in-class presentations about resumes, interview skills and on-campus recruitment. These schools were similar in that the placement officers actively sought out those students approaching graduation, through comprehensive class presentations, workshops, or individual mailings. In only one school was the burden of making contact left to the student or faculty member on behalf of the student. The differences among Placement Offices in their approach appears to be a factor related to the number of students who participate in on-campus recruiting, although the small number of cases prevents testing for statistical significance.

Placement Office Services

Differences were also apparent in the types of services that were offered by the placement offices in the schools studied. Each of the seven schools provided written guides to preparing a resume and writing a cover letter; however the qualitative differences between schools was striking. Two schools provided a workbook that showed by example the importance of clarity and brevity. Two other placement offices included sample resumes and cover letters to guide students. The remaining schools had pamphlets or hand-outs available, but the materials were cursory in content.

A number of schools provided their students the opportunity to simulate an interview situation. Interviewing skills were developed and tested by role playing or video taping. These efforts by the schools to help each student develop their job-winning--as well as job hunting--abilities can make a significant impact on a graduate's ability to locate and secure employment.

Placement offices varied also in the availability and willingness of the staff to assist students one-on-one with their resumes and other job hunting problems. In three schools, the availability of an on-site New York State Job Service representative greatly facilitated the procedures of employer contact and vacancy notification, thereby freeing college staff to be more accessible to students. In one school, the director of the placement office urges the staff to have dedicated office hours during the spring term to help students with preparing for interviews. In another school, the placement office offers to type the student's resume to assure that it will have a neat and correct format. These practices alone do not assure

successful placement for students, but they are illustrative of the general attitude of the placement office toward its responsibility.

Faculty Involvement

In some schools department faculty were found to be involved in helping their students locate appropriate employment. In two of the seven schools, faculty routinely canvassed employers about vacancies and either referred the information to the placement office or announced the vacancy to their students. In both cases, the faculty-placement office relations were cooperative, and the placement offices provided other kinds of support where appropriate (typing, phone follow-up, etc.). In one school, the placement officers encouraged faculty to be involved by inviting them to lunch with recruiters. In two other schools, however, faculty participated in placement efforts in a fairly autonomous fashion. Resume preparation, interview techniques, employer contacts were offered by some faculty, independent of the placement office. This occurrence was found either in the engineering/mechanical departments (where presumably a greater familiarity with technical requirements would foster better faculty-employer relations) or in the health science departments (where placement office efforts have traditionally been weak being superceded by a more direct department link). In the remaining two schools, virtually all activity related to placement occurred through the placement office.

Curriculum Advisory Councils

Schools and their local employer population interact in several ways. One important linkage between the two occurs via curriculum advisory councils (CAC's). Community colleges and agriculture and technology schools

are mandated to have their academic programs reviewed for content, appropriateness for local labor needs, and faculty quality by committees comprised of civic leaders, employers, former students and (where appropriate) local professionals in the field. Part of the discussion with school officials was aimed at developing a better understanding of the way CAC's functioned and their influence on graduate yields.

The strength of school-employer linkages via CAC's can be evaluated on the basis of the variety of activities the committees can be involved in. Activities can be narrowly (or broadly) focused as suggested by the following list:

- o critique of program
- o access to specialized grants
- o access to equipment
- o job information
- o advice on teaching or equipment
- o liaison with local industry
- o review of faculty recommendations and salary
- o review growth possibilities of area
- o recommend numbers to be admitted to the program
- o select and award prizes to students

Fourteen CAC's were studied--five in business and commerce curricula, four in engineering/mechanical curricula, three in health services and two in data processing. Schools were found to vary widely with respect to CAC composition and function. No CAC studied participated in all the activities mentioned above. The majority provided feedback on curriculum, shared job information, and offered advice on teaching or equipment. These endeavors were performed with varying degrees of intensity by discipline and by school. In only one school were committees given formal responsibilities to execute by college deans.

Committees were found to range from one to 12 members in size. Only one school had college-wide guidelines for membership--professional and local employer participation was stressed with suggested proportions for the committees' composition. Members are generally solicited in one of three ways. In several schools, departments contact appropriate companies or institutions to request participation on a CAC but allow the company to appoint a representative. Particularly in the case of large firms, the potential exists to appoint an individual who is unfamiliar with all aspects of the firm and can only be helpful in certain areas of activity. Other departments looked to their faculty to identify key persons in industry, private employers or other professionals who would make a positive contribution to the committee. Finally, some ask current members for referrals. In only two schools were student representatives appointed. As a result of lack of conformity in selecting CAC members, CAC's in like curricula were found to be dissimilar in membership.

Discussions with faculty participants indicated that CAC's meet a few times a year at most. In most cases, there is one formal meeting a year augmented by subsequent "appreciation" functions such as luncheons or dinners. Most people interviewed stressed the value of the informal contacts between meetings to address the general tasks of the group. These contacts, however, appear to be of varying frequency. Because little opportunity is available for the members to work together the chair of the committee becomes pivotal in maximizing the skills and resources of individual members. There are also implications for agenda setting and logrolling by active committee members.

At the formal meeting, usually chaired by the department chairman, there appears to be general ambiguity about procedures. The lack of clear goals or objectives in many groups was acknowledged by those interviewed. The result appears to be fairly limited participation by non-department members. The fact that most agendas are developed by the department merely reinforces the tendency toward a reactive stance on the part of many members.

Attendance

Attendance was described to be problematic with many CAC's. In spite of the infrequency of scheduled meetings, 20 to 80 percent of members miss meetings. In the case of one data processing CAC, no meetings had been held for several years. A committee whose members change or participate intermittently is forced to spend time and resources bringing members up to speed or up to date, thus diverting the focus from the express purpose of meeting. Worse, the lack of continuity in participation effectively spreads the ability to influence the committee's thinking over a smaller number of regular attendees--according to the respondents, it is the faculty members on CAC's who are the most loyal attendees. The result yields an opportunity for "regulator capture"; faculty face an incentive to minimize change and their disproportionate influence on the committee increases the likelihood that change will not occur or will have a small impact.

Given the infrequency of meetings, the absence of clear guidelines and the variability of attendance, CAC's are limited in the contributions they can make as a source of innovation for the programs they review. The general purpose of CAC's in most programs could be better realized if improvements in goals and objectives were achieved and if participation were more consistent.

The initial reason for CAC's to exist (e.g., to provide independent professional review of programs) requires that the committee be active. Without on-going and thorough input from all CAC's members the chance for significant influence in the evolution of curricula is constrained.

Cooperative Education

Placement officers were questioned during the interview about the availability of cooperative education opportunities for their students. None of the seven schools studied had a college-wide co-op program, though selected individual departments in some schools were shown to have programs for unpaid field work or paid work experience. Health science students are generally required to complete unpaid clinical rotations in order to qualify for licensure examinations. Other examples of unpaid field work were found for students in retail business management, data processing, mechanical engineering, and materials science. Credit was awarded for participation in field work in some departments. Paid work experience was found to be less common. Programs dealing with automotive technology or data processing were identified.

Across all schools, responsibility for soliciting the participation of willing employers rested on the individual departments. In some schools the department released a faculty member from half his teaching responsibility to administer the work experience program. One school has an areawide coordinator to handle several programs.

Discussions with placement officers and departmental representatives indicated that cooperative education had declined in significance in all

community colleges in recent years. All agreed that co-op programs were beneficial, but the administrative cost, the small number of students that each employer was able to accept, the potential for exploiting students as low cost menial workers and the absence of dramatic positive impact on student placement in some cases were all cited as reasons why co-ops have been phased out by schools. Two schools reported that planning was underway to review the potential benefits cooperative education can provide to both students and employers.

The picture from the schools about the viability of co-op experience should be viewed in conjunction with the information provided by sample employers. Most employers in the case study sample expressed satisfaction with the approach to education. Those whose companies sponsored programs indicated that both schools and students gained from the opportunity. The telling feature may be that most employers revealed that the success of the programs they sponsored and hence their willingness to continue them was largely due to efforts made by the schools involved to ease the employer's responsibility. This finding supports research reported in the literature that stressed initiative by schools.[1] Adequate preparation, screening and supervision of students by faculty went a long way in assuring employers that the schools were not shirking away from active participation in the process.

Viewed from a long-range standpoint, cooperative education can contribute significantly to building and maintaining ties between schools and

[1]Fenwick, Dorothy C. (ed.), Directory of Campus Business Linkages; New York: MacMillan/American Council on Education, 1982.

their employer constituency. In the course of coordinating the program, the opportunity exists to learn directly from supervisors, managers and personnel administrators what the company needs. By providing students with the chance to apply the material the faculty teach, employers help to shape a student to be prepared for work; even if the student eventually is hired elsewhere, the technical experience as well as the exposure to a work setting, makes him a more attractive candidate when he seeks full-time employment. While the need may exist to identify a large number of employers (since in general the programs are small--about five students), the long-range benefits would appear to justify the effort.

Monitoring and Evaluation

The nature and content of feedback mechanisms available to schools were studied in an effort to assess the capacity to monitor their placement efforts and evaluate their success. The capability to examine one's performance is an important element in assuring that a system designed to achieve a specified objective is on target. There are two major sources of feedback for the placement offices to consider: the recruiters who are invited to campus and the graduates. Contributions from each group can be helpful in showing where and in what ways improvements could be made to the placement/recruitment process.

Feedback from Employers

Schools were found to have different practices for receiving feedback from the employers who were invited to recruit on campus. Two schools sought to identify the reasons why employers declined the invitation. While this approach is more appropriate in schools who solicit a narrow range of schools,

the information obtained proved useful in improving the targeting of potential recruiters. In several cases, the schools learned that the employer was not dissatisfied but only facing a bad year--this helped keep the firm on future mailing lists and prevented the termination of a potentially fruitful liaison.

None of the schools surveyed made a point to routinely contact employers after they had interviewed on campus. Feedback was obtained by some schools only informally and only if initiated by the employer. Contact with employers after recruiting would appear to be a good chance to review the success of the interviews, the appropriateness of the candidates interviewed and to discover ways in which the schools can be more helpful in assisting the recruiter (e.g., arrange appointments with program faculty, audio-visual equipment, etc.). Steps such as these have been recommended as positive indicators of the school's interest in each company which recruits.[1]

Placement Survey Results

Each school annually canvasses the most recent graduates to obtain information on their employment status. Each graduate is asked whether he has sought employment, whether he has been hired, whether he works part- or full-time, his employer, job title, starting salary and how directly the job is related to his major. Data from the returned questionnaires are tabulated and the results presented in a placement report.

Ideally the placement reports should provide a key source of feedback on the employment status of graduates to be used in making comparisons among the schools studied with respect to graduate yields. While inter-school

[1]Noggle, Luke H., "University Relations: Improving the Productivity of On-Campus Recruiting," Journal of College Placement, Spring 1979, p. 58.

comparisons were in fact made, several factors were identified that potentially bias the results. The factors deal primarily with the method of administering the graduate placement survey, both in the timing of the survey mailing and length of follow-up, and in the way in which non-respondents and unemployed respondents were counted for inclusion in the final report. These factors are discussed briefly below:

- o Schools were found to vary widely in their choice of when to mail the placement survey. One school began collecting surveys at the May graduation rehearsal, while several others delayed until one month past graduation. Two schools began in November and two waited until one year after May's graduation date.

- o Depending on the timing of the survey, schools differed on which off-schedule graduates (i.e., September, January) were included. Some schools included the three most recent groups of graduates regardless of when the mailing occurred while others cut off at the May graduation, even if the mailing went out in November. The result is that students vary in the length of time they could have searched for employment but are treated as though they had equal time.

- o Schools were found to carry on the survey from four to twenty weeks before abandoning efforts to contact non-respondents. Those with shorter follow-up increased the likelihood of non response or a response of "unemployment."

- o A response of "unemployed" was handled differently across schools. In several schools, an initial response of unemployed was included in later follow-up contacts to see if the graduate located work. This resulted in some cases of a graduate being contacted three or more times. One school developed elaborate estimation procedures to compensate where returned surveys proved too inadequate to accurately represent the class. Alternatively, a few schools ceased contact with a graduate whose returned survey indicated he was unemployed. Those schools were likely to report higher unemployment rates.

Given these differences in methods, the survey results should be viewed with a degree of caution. While the effects identified above would not be expected to damage an entire survey, the resulting proportions of employed and unemployed graduates should be considered approximate.

Table 1, following, provides sample school placement data, summed by discipline. Only those schools who reported actual values were used in the analysis. The numbers of respondents were totaled across all schools, with the range of individual values provided underneath. What results is a composite profile of placement success across all schools by discipline. This format allows comparison of placement success by discipline for individual schools against the composite picture. This approach also prevents individual schools from being identified.

The results show that business and commerce graduates are the most plentiful, followed by engineering/mechanical, health sciences and data processing. Across the sampled schools, business and commerce programs showed the most variation in numbers of students per discipline. The school with the fewest BC students had 149; the one with the most had 603. Roughly 90 percent of the graduates in each discipline responded to the survey.

The table below highlights the number of respondents in each discipline who reported being employed. The employment proportion for each discipline was obtained by taking the total number of employed respondents and dividing by the total number of job seekers (i.e., the total number of respondents minus transfers).

Discipline	Total Number of Job Seekers[1]	Total Number Employed	Average % Employers
Business/Commerce	906	721	80%
Data Processing	241	195	81%
Health Sciences	890	823	92%
Engineering/Mechanical	833	703	84%

[1]Excludes transfers.

TABLE 1
PLACEMENT SURVEY RESULTS
SIX SAMPLE SCHOOL TOTAL

	B/C[1] #	B/C[1] %	DP[1] #	DP[1] %	H/S #	H/S %	E/M #	E/M %
# Graduates								
Total	1,322		331		1,164		1,417	
Range of Values	149-603		34-162		31-326		73-361	
# Respondents to Survey								
Total	1,142		300		1,049		1,256	
Range of Values	127-603		28-162		31-310		60-351	
# Transfers								
Total	236	21[a]	59	20	159	15	423	34
Range of Values	4-80		5-22		0-73		10-125	
# Seeking Employment[2]								
Total	906	79[a]	241	80	890	85	833	66
Range of Values	88-190		21-84		59-277		50-226	
# Employed								
Total	721	80[b]	195	81	823	92	703	84
Range of Values	75-577		13-134		28-256		46-196	
# in Directly Related Field[3]								
Total	538	75[c]	118	61	724	88	556	79
# Unemployed								
Total	117	13[b]	35	15	74	8	111	13
Range of Value	7-42		4-18		1-24		2-36	

[1]Only career programs included
[2]Total survey respondents minus transfers
[3]One school's value was estimated based on the sample average
a. proportion of survey respondents
b. proportion of respondents seeking employment
c. proportion of employed respondents

These figures indicate that students graduating in health science curricula were substantially more likely to have located work than other graduates. In addition, the employment rates for health science disciplines for individual schools clustered more closely around the average than for other disciplines. Following health science, the disciplines ranked by the proportion of employed respondents were Engineering/Mechanical, Data Processing and Business/Commerce. From these figures alone, one would be tempted to surmise that Business/Commerce students were least likely to be able to benefit from their training. Simple employment, however, fails to take into account the nature of the training and whether the job secured uses the skills developed.

The table below highlights the numbers of employed respondents who indicated that they were working in a field directly related to their education. (The assessment of "directly related" was left to the respondent to decide.) Again the samplewide average proportion was obtained in the manner described above.

Discipline	Total Number of Employed	Total Number in Directly Related Field	% in Directly Related Field
Business/Commerce	721	538	75%
Data Processing	195	118	61%
Health Sciences	823	724	88%
Engineering/Mechanical	703	556	79%

A different picture emerges when the measure of employment in a directly related field is considered. Health science graduates are still the leaders in securing related employment, and Engineering/Mechanical students follow in second place. Data Processing graduates lag significantly in the average

proportions of employed who work in a directly related field. The findings imply that strong technical training is associated with a greater likelihood of finding work in the field.

IV. EXAMINATION OF ENVIRONMENTAL AND PROGRAMMATIC FACTORS ASSOCIATED WITH GRADUATE YIELDS, AND DISCUSSION OF PROGRAM STRATEGIES TO MAXIMIZE YIELDS

Introduction

The overall purpose of this study is to identify factors which help explain the variance in the graduate's yield from post-secondary education, and to develop strategies which would help maximize the yields. Employer case study data provide information regarding hiring criteria and salary determinants; this helps to explain the different salary levels paid two-year graduates. School case study data provide an explanation of the procedures utilized to maximize graduate placement/yield--through placement/recruiting efforts and school/employer linkages. Assessment of employer and school data provides the basis for observations regarding factors which are associated with graduate yields.

Framework for Analysis

As a case study, the design of this research does not permit a great deal of quantitative analysis because of the limited number of observations; however, a structured analysis was conducted which utilized the quantitative and qualitative data available. This analysis included an examination of a series of dependent and independent variables, as follows:

- Dependent variables were selected which quantified the various graduate yields experienced among the schools. Variables included the graduate salary level and the percent employed/unemployed, by discipline for each school. These were examined independently and in combination to gain an understanding of the comparative levels and rankings of school performance.

- Independent variables indicating environmental and programmatic characteristics were examined in relation to the above salary and employment levels to gain an

understanding of the factors which are associated with graduate yields. The variables examined included environmental factors such as local unemployment rate, the number of large employers in the area, supply/demand by discipline, employer's preference for experience, employer's use of technicians, student locational preferences, labor market competition, discipline effects; and programmatic characteristics such as placement and recruitment procedures, school/employer linkages, and the number of graduates per discipline.

The relationships between dependent and independent variables were initially examined utilizing a general linear models procedure. Models were run sequentially with programmatic variables added once an environmental model was established. This analysis proved to be inconclusive; the failing of statistical techniques was likely due to the small number of observations, the variable quality of school placement data, and lack of sufficiently precise environmental and programmatic variables.

In lieu of detailed statistical analysis of case study data a qualitative assessment of the data was conducted which examined the various factors across the schools and delineated standards of practice which were typical among schools which had better graduate yields. Observations gained from comparing graduate yields and environmental/programmatic characteristics will be made in the following sections, and employer findings will be integrated as well.

Comparative Graduate Yields

As explained previously, a number of measures were utilized as dependent variables in the assessment of graduate yields. These included the average graduate salary among the disciplines studied, the percentage of students employed after graduation, a standardized percentage of students

employed (adjusting for the local area unemployment rate), and an effective graduate yield calculated as the average graduate salary multiplied by the percentage employed or the standardized percentage employed. These measures for the six sample schools for which they were available are provided in Table IV-1 following.

The data in Table IV-1 indicate that the multiplication of salary and percent employed, and the standardization for local unemployment create a shifting of rankings among the schools. Since there is no singular measure appropriate for the comparison of yields and since the data are the result of a variety of placement survey techiques any conclusions should be limited to general tendencies in the data. In this regard it can be seen that each school performs above average in at least one measure of yield. Additionally, against the two component measures of effective yield only two schools consistently perform below average; however, except for the highest and lowest values in these series there is not a great deal of dispersion among the yields. The overall rankings will be used when assessing the influences of environmental and programmatic variables in the following sections. The variation in yields is more significant when examined by discipline; however, our interest here is to look at overall yields--specific discipline effects will be examined within the discussion of independent variables.

Environmental Factors Contributing to Graduate Yields

Environmental variables are considered to be largely outside of the school's control/domain, while programmatic variables (reviewed in the next section) are largely within the school's control. This section addresses the environmental factors and their influence on graduate yields.

TABLE IV-1
COMPARATIVE GRADUATE YIELDS IN SELECTED DISCIPLINES

School	Employment Rate		Average Salary		Employment Rate X Salary		Area Employment Rate		Standardized Employment Rate	Standardized Employment Rate X Salary	
	%	Index	$	Index	$	Index	%	Index	%	$	Index
1	87.9	99	13,845	103	11,853	102	92.9	101	87.0	11,731	101
2	92.6	105	12,459	95	11,537	99	94.1	102	90.5	11,275	97
3	91.8	104	12,295	94	11,286	97	87.7	95	96.3	11,840	102
4	78.7	89	14,128	108	11,118	96	93.6	102	77.5	10,949	94
5	95.0	107	13,277	101	12,613	109	92.4	100	94.6	12,560	108
6	84.7	96	13,476	103	11,414	98	91.0	99	85.6	11,535	99
Average	88.5	100	13,132	100	11,621	100	92.0	100	88.5	11,621	100

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NOTES

1. Graduate Employment Rates and Average Salary Data were derived from published school placement reports for the 1982-1983 period.

2. Area Employment Rate represents the county employment rate for the 1982 calendar year.

3. Standardized Employment Rate is equal to the Employment Rate for the school divided by the Index of the Area Unemployment Rate.

Supply and Demand of Graduates and Jobs by Discipline

Employer contacts revealed that the major determinant of salaries is the relative supply of qualified applicants with minimum or higher levels of required background. In fields where technically trained workers were readily available, employers almost universally lowered salary offerings, rather than raise the requirements of the position; likewise salaries were raised in response to low supply levels.

Supply of recent labor force entrants with two and four year college education is high relative to the number of jobs available[1]--this has a tendency to make the two year degree a minimum screening criterion rather than a competitive advantage. Because of supply/demand balance many four-year graduates may be taking jobs which otherwise require only a two-year degree.

As a result of this influence (particularly in the disciplines of Business/Commerce and Data Processing) two-year graduates often take jobs in their field which do not require a degree or take jobs outside of their field. The result is lower effective graduate yields. To the extent that schools have above average proportions of these low yield graduates the school's overall yield will be lower than average.

Employer's Preference for Experience

Employer contacts indicated that technical skill was the most important factor as a job requirement and in employee selection; however in addition to this experience was also rated highly--particularly as a job

[1] Occupational Projections and Training Data. U.S. Department of Labor, Bureau of Labor Statistics, December 1982.

requirement. This employer preference for experience may be due to their size, training preferences, or supply/demand factors. If employers do require experience in addition to technical skill the two-year graduate may be hired at a level below their training, or not hired at all by many employers.

Employers' Use of Technicians

Employers able to use the specialized skills of the two-year graduate are more likely to hire them and pay competitive salaries. These employers will generally depend on less post-hiring training, and will generally be larger in size. Conversely, those requiring broader/less specialized skills often promote from within, hire experienced workers, or face more post-hiring training with a two-year graduate; therefore, two-year graduates are not typically hired by these employers or are paid lower salaries when hired.

Employer's Size

Employer contacts during the first and second year of this study indicate that larger firms have a number of characteristics which affect their use of two-year graduates. Generally, larger firms have more specialized needs, require more technically skilled employees, have the ability to train in-house, require larger numbers of hires on a regular basis because of replacement needs, and regularly compete for quantities of graduates/hires. These characteristics make the larger firm a logical employer for the two-year graduate and generally cause higher salaries to be paid by the larger firm.

Preferences of the Student Body for Local Job Location

Schools contacted during this study (and findings of other studies) indicate that community college graduates typically seek "local" employment

opportunities and will generally not take job opportunities outside of their area.[1] Therefore, if jobs in the graduate's field are not offered locally they may take lower paying jobs in or outside their field in order to remain in the community. This tendency is less prevalent in the disciplines of data processing and engineering/mechanical which appear to be more mobile.

Agricultural/technical schools are less affected by the local employment constraint because they have residential facilities and may attract a more mobile student population.

Geographic Location of Employers/Schools

The local employment market will influence the placement rates and yields of the two-year graduate. Area employment/unemployment rates and the proximity to large employers will affect graduate yields because (1) two-year schools generally serve a local labor market, (2) employers generally hire from schools that are "close-by", and (3) larger employers hire many two-year graduates at competitive salary levels. If two-year schools are in a soft local labor market or are remotely located they will have an uphill battle to secure competitive placement and salary yields.

Demographics of Labor Force Competing for Jobs Within Discipline

The proportion of job openings filled by experienced workers, persons from school, persons who previously were at home (not in the labor force) varies depending on the job. Additionally, some jobs are more likely to be filled by either males or females. Obviously these factors are influential in

[1]Geographic Mobility of Postsecondary Occupational Education Graduates, VEA 53-83-0347, Two-Year College Development Center, State University of New York at Albany, September, 1983.

determining the degree of competition for a given position. The result of this is that two-year graduates will face various probabilities of employment depending on the discipline and job sought--based on the competing labor market forces. Much of this is attributable to the degree of training required for jobs: those that require less formal education will more likely be filled by experienced workers outside the field or by persons previously performing household responsibilities. Therefore, some jobs (e.g., secretarial) are highly competitive since only a small proportion are hired directly out of school. This influence is most significant within the business/commerce discipline, where the supply of non-graduates competing for jobs causes lower placement and salary yields for two-year graduates.[1]

Nature of Discipline/Discipline Effects

The technical and job-specific orientation of education in selected disciplines such as engineering/mechanical and health science is greater than other disciplines, particularly in those areas with licensure requirements (e.g., nursing). This makes the transition from school to work easier, with less employer-specific training necessary. Combined with the fact that these skills cannot easily be acquired without formal education a higher than average proportion of new hires in these areas come directly from school rather than from the other job sources of those in the existing labor force or from those previously out of the labor force. In nursing, for example, effectively all hires come directly from school or were previously trained in school. Therefore, it is more likely that two-year graduates will secure jobs in their field when in these disciplines.

[1]Occupational Projections and Training Data. U.S. Department of Labor, Bureau of Labor Statistics, December 1982.

Programmatic Factors Contributing to Graduate Yields

A variety of factors are within the school's control/domain which will tend to influence the graduates' yield. These have been broadly classified here as programmatic factors. The following sections will discuss three areas examined in this study--placement/recruitment procedures, school/employer linkages, and the supply of graduates.

Placement/Recruitment Process

It is assumed that schools with effective placement and recruitment procedures will be better able to attract qualified employers and to gain better placements than others that don't have such procedures (all other factors constant).

Recruitment

A review of recruitment procedures and varying graduate yields within the sample schools provides us with a picture of the standards appropriate for maximizing graduate yields. In this discussion recruitment will be limited to the process of identifying, inviting and scheduling employers and students to participate in recruiting. All other activities involving placement of students will be treated in a separate discussion of other placement procedures.

Identifying firms: Directories from the local and state Chamber of Commerce, Industrial Management Councils, New York Business Council, New York State Job Service, and College Placement Council provide abundant information on both large and small employers within the state who may be interested in two-year graduates. These can be examined by standard industrial classifica-

tion code in order to narrow the field of focus to those appropriate for the programs recruiting.

Selecting/Inviting Firms: Evidence indicates that a concentrated effort on a smaller number of local and state firms is more efficient and effective than a shotgun approach to a large number of firms. In addition to maintaining a record and regular contact with firms who have recruited in the past the placement office may annually assess new opportunities for recruitment--with a concentration of effort on viable local employers. As the local employer market is depleted other employers in New York State (or bordering states, if generally in the labor area) may be targeted on the basis of their geographic proximity and likely use of two-year graduates from the school. If employers are more strictly targeted in order to narrow the focus to a field of approximately 150-300 employers, the placement office can personally follow up with each to identify the nature of their employment needs (in addition to the mail invitation/explanation regarding recruiting).

Scheduling Firms: Currently, schools generally schedule recruitment to occur in the Spring (anywhere between January to May). This timetable is designed to capture the largest number of graduates--those in the spring. Depending on the school this will represent approximately 75 percent of the students. In consideration of both students and employers schools may want to give consideration to splitting recruiting sessions to provide a better timed process for fall and winter graduates and for employers who may have needs at other times in the year. A closer working relationship with fewer employers may provide the opportunity to determine the employer's preferences for split recruitment.

Identifying Students: The most streamlined method for identifying students for recruitment exists in schools which have computerized student records. In this case students with enough credit hours can be targeted and mailing labels can be created to use in the next step.

Inviting Students: Students can be invited and encouraged to participate in recruiting in two ways: (1) by mailing them information regarding the recruiting program, including the employers to be participating, and (2) by providing classroom presentations which offer information on the recruitment program and other services available through the placement office.

Scheduling Students: The final step in the recruitment process is scheduling of students for recruiting. In order to ensure adequate preparation on the students' part it is adviseable to require the registration of the students with the placement office and the completion of a "credentials file" as a prerequisite to participating in recruiting. The credentials file needs to at a minimum contain a student fact sheet, transcript, and resume. This information may be made available to recruiters prior to the interviewing process. The sign-up process should be open for those registered with the placement office and should be designed to allow all students equal opportunity for participation.

Other Placement Activities

A variety of placement procedures exist--both in conjunction with recruitment and independent of recruitment. The following discussion will consider in-class presentations, counseling/workshops, written guides, faculty involvement, and New York State Job Service support.

In-class presentations: An effective method of informing students of the placement function, placement services, and benefits of those services is to schedule classroom presentations in senior-level courses. These presentations can both notify students of services available for placement and provide summary information about preparation of resumes, interview techniques, and recruitment.

Counseling/Workshops: Workshops should be regularly scheduled and widely advertized in a number of areas including resume preparation, interview techniques, and networking. Video training programs can be utilized in areas such as interview techniques, as well as role playing training. One-on-one counseling opportunities should be encouraged to assist students in preparing for job hunting.

Written Guides: Written guides to resume preparation and interview techniques should be available for dissemination to the students. These can contain examples of resumes, cover letters, and interview dialogue to provide the student with a thorough grasp of what is expected.

Faculty Involvement: Cooperation between faculty and the placement office in performing the placement function is beneficial. Faculty involvement in the job search process can be very productive if done in conjunction with placement office operations. Faculty should participate in the recruitment process (particularly in delineating program content), and can be a liaison between employers and the placement office and students for job opportunities.

NYS Job Service: The availability of a New York State Job Service representative on-campus improves the opportunities for student placement and

provides a central source for information on the nature and number of listed job openings in the labor area. In addition, the availability of a Job Service representative to facilitate employer contact and vacancy notification frees up additional college staff time which can be used to work directly with students and/or employers.

School/Employer Linkages

Effective linkages between the school and local employers are critical for continued development of curriculum, support of current programs, and the maximization of placement yields. Two mechanisms which can assist in strengthening school/employer linkages are curriculum advisory councils and cooperative training programs.

Curriculum Advisory Councils (CAC's): CAC's can be an effective tool in reinforcing the linkages between the school and employers. Currently, many CAC's are not being used effectively to meet their major goals of providing feedback and direction on curriculum content and teaching methods, sharing job information, and providing a conduit for the provision of employer resources (equipment/supplies) for training purposes. Additional study is needed to determine how the CAC's can maximize their contribution to graduate yields.

On a preliminary basis it seems appropriate to suggest that in order to maximize the contribution of CAC's they should be provided with authority commensurate with their responsibility; direct input regarding curriculum decisions, funding of programs, size of programs, etc. will provide the incentive needed to have more consistent and constructive involvement of CAC's. As a beginning step in this process, CAC's must develop clear and

concise statements of goals and objectives so that they may formulate their annual work programs accordingly. Formal subcommittees can be established for specific purposes and should meet periodically during the year to accomplish their tasks.

Cooperative Education: Job experience with an employer as part of the academic program (cooperative education) appears to be an effective means of developing both technical skill and experience as part of a two-year program. Since employers consider experience as an important factor in the selection process the benefits of controlled experience before graduation seem obvious. There has been limited experience with cooperative education in the sample schools--with the major exception being in health service where experience is part of degree and licensure requirements. Similar programs should be experimented with in other disciplines in an attempt to resolve the claimed hurdle of higher administrative cost. If the efficiency of cooperative education can't be increased to make it a viable program, consideration can be given to altering the tuition structure for such programs--with the assumption that increased graduate returns due to higher levels of placement and more appropriate placements would justify such a cost differential.

In any event, given the higher employer preference for in-house training in less technical fields such as business/commerce, cooperative education may have its greatest strengths in the more technical fields such as health and engineering/mechanical. As with CAC's, more study is necessary in order to fully justify and identify the most effective cooperative education models.

Supply of Graduates

Because of supply and demand considerations the yields from post-secondary education vary significantly by discipline. In order to maximize returns an attempt needs to be made to balance discipline graduates with the jobs available in each; programs shouldn't be encouraged if few jobs are available in the field. This supply/demand balance is likely the single most significant factor in the determination of economic returns from post-secondary education.

Occupational counseling of students should begin in high school and be carried on throughout the two-year program. Students should be made aware of current and future job markets by discipline and should be given clearer occupational information. The State Departments of Labor and Education should play lead roles in the provision of timely occupational data to local school officials so that the information can be made readily available to the students. CAC's can also help provide the insight necessary for the control of program graduates in selected disciplines.

It is clear that the two-year schools, with state leadership, need to take a closer look at their programs versus forecasted job vacancies; predicted mis-alignments should lead to planned program changes. If the state agencies (DOE, DOL) and area employers were able to provide timely information regarding current job vacancies and forecasted occupational demand (in each labor area and statewide) the schools could begin planning program changes before supply/demand misalignments become a significant problem. Because there is at least a two-year lag in program planning, this information must be regularly forecasted so that future changes are predicted. As the forecasted changes begin to occur the schools may then institute programs that were planned based on the forecasts.

V. SYNTHESIS AND SUMMARY OF RECOMMENDATIONS

Synthesis

The purpose of conducting interviews with school officials and employers from selected communities was to examine procedures in each school that could influence the salary yield of its graduates in the disciplines studied. To accomplish the analysis of the various components of counseling, placement, academic departments, curriculum advisory committees and dedicated employers in assuring the effective training and placement of students the interview data was assessed both quantitatively and qualitatively. Measures of process and outcome have been developed for the purpose of data analysis.

In the process of developing the analysis, there has been a unique opportunity to observe the functioning of the case study schools with respect to developing and maintaining strong relations with employers in the schools' environment. To the extent that case studies can be useful is developing realistic generalizations about the subjects studied, the information obtained during the site visits offers/allows the chance to develop a synthesis of the process by which students are prepared and placed to work in technical positions.

Conceptually, it is useful to consider the academic-counseling- job preparation-recruitment functions of the community college or agriculture and technical schools as a network of linkages between faculty, employers, interested professionals, placement officers and students. Each party has an interest in seeing that the college assimilate the information on labor needs and available technology to it, accurately train students in demanded skills, and provide a conducive mechanism to bring students and employers to a hiring

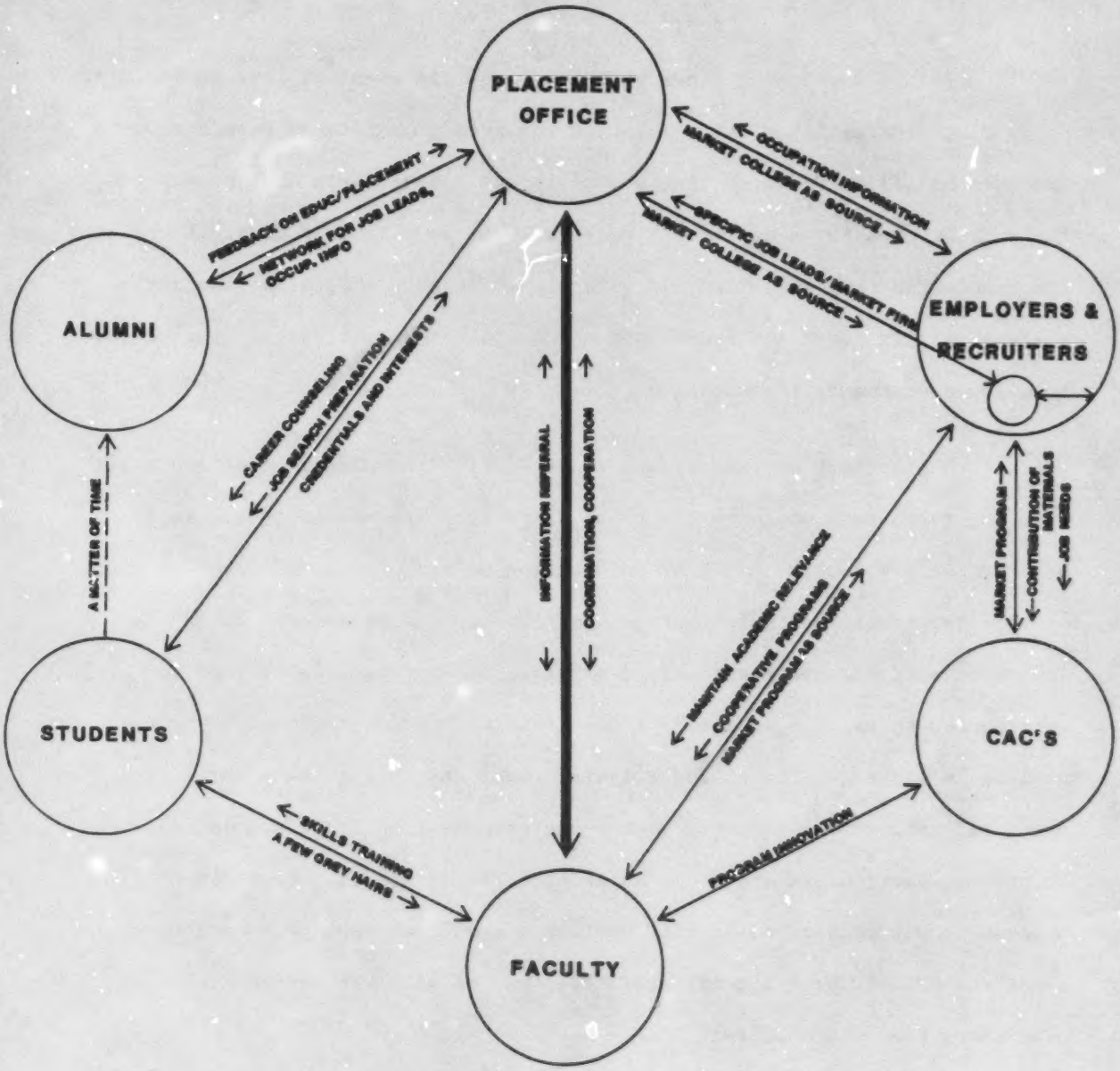
agreement. In order to accomplish these objectives, inputs into the college must be accomplished, faculty must be current in their teaching, interested employers sought and qualified students identified. Each step requires the coordinated effort of several parties. The channels through which these efforts are accomplished must be strong viable linkages for the system to succeed.

Figure V-1 identifies the groups of individuals involved and the nature of the exchanges between them. Immediately apparent is the fact that each linkage is bilateral--in order for the channel to be sustained, each party must continue to receive something worthwhile. This implies that both parties involved in a linkage must contract explicitly or implicitly for the channel to develop and commit resources (time, effort, money) to maintaining it.

Employers. Firms located in proximity to a college can be involved in the education and job search procedure in several ways. For much of the following discussion, "employers" are taken to be persons in management or executive positions within a company who would be expected to know about the functions and needs of the entire firm. Employers are considered here to be distinct from recruiters, as will be shown below. Through active participation on Curriculum Advisory Committees, employers can articulate their needs with respect to specific academic programs. The more accurate the information from employers about job trends, the greater the chance schools will produce desirably trained graduates. In addition, through contributions of materials, employers assure that the training within a given curriculum is relevant and contemporary. In return, employers receive information on the design, and

FIGURE 1

CONCEPTUAL NETWORK OF COMMUNITY COLLEGE LINKAGES



quality of an academic program. Linkages with individual faculty are also necessary to maintain academic relevance. Liaison is also required with faculty for efficient administration of cooperative education programs. Faculty in turn share program news, as well as market the program as a source of employees.

Before developing links with a college placement office, an employer needs clear intra-office relations with the person or persons delegated with the responsibility of recruiting new employees. Recruiters must understand the current gaps in an employer's work force to be able to accurately evaluate the candidates they see. The recruiters must in turn inform the managerial staff of a firm about the pluses and minuses of their activity at the schools to allow adjustments if necessary.

Employers have independent linkages with the placement office apart from the recruiters who work for them. Employers are sought by placement officers as a valuable source of information on various occupations and kinds of work opportunities that might be available to the graduate. It is important that the placement office maintain and update this type of information to be able to assist students in clarifying their employment goals. In exchange, the employer learns about the college as a whole as a potential source of employees. Since the placement officers are not equipped to provide particulars about the scope or depth of training in a given program, their participation with employers should attempt to inform them about the variety of graduates available and the ease with which qualified candidates can be identified.

Recruiters have different participation with placement officers than do their employers. It is they who have information on actual job leads and are empowered to screen candidates. In addition, they market their firms as attractive or advantageous places to work in an attempt to interest qualified graduates. Recruiters' involvement is thus more detailed and technical than that of their employers, but both linkages are important to assuring that the payoffs are the best they can be.

Placement Office. The Placement Office fills a critical role in bridging school and employment. The services it provides are aimed at assisting students who are approaching graduation in targeting their employment preferences. In addition to the foregoing discussion of relations with employers and recruiters, the Placement Office maintains active linkages with several other parties. With college alumni, the nature of the linkage focus on developing an on-going resource for former students. The information obtained from employers and alumni is important in building materials to guide career development. The Placement Office can collect and provide information about career enhancements, subsequent placement opportunities for graduates already employed as well as provide guidance in targeting employers or changing fields. In exchange, alumni are a largely untapped resource network for job leads and hands-on occupational information. By adapting the placement questionnaire used for recent graduates, schools can readily develop a regular canvassing of alumni to develop the range of contacts and identify services alumni would find valuable.

The largest and most demanding constituency the Placement Office must relate to is obviously its students. For the purposes of this discussion, the

functions of the Placement Office will be assumed to include career exploration, which is some schools is the responsibility of Counseling Services. In those cases where the two offices exist, exchange of appropriate information and referral of students is assumed.

The Placement Office assists students in three major ways. First, students are offered career counseling before they select a major. This service seeks to match a student's interest and talents with an occupational area that will develop their best skills. Once a student selects an appropriate major and completes a specified amount of training, the Placement Office becomes involved with its second set of services, job search preparation. By developing resumes and interview skills or by building techniques for narrowing employment preferences, placement officials ready the students to more effectively negotiate their first job offers. Once these skills are developed, the students are prepared to use the Placement Office for its third set of services, namely recruitment and other job placement.

What students provide to the Placement Office in exchange is more subtle. Aside from being the primary beneficiaries of the services offered, students offer in return their own credentials and interests. These in turn are what the Placement Office uses in its bargaining relations with recruiters or helps to build the Office's network with alumni. Students can thus be viewed as a critical input to the Placement Office functions, as well as receivers of its output.

Faculty. Like the Placement Office, faculty are involved in exchange relations with employers and with students, albeit with critically important

differences. Faculty maintain linkages with employers both directly and indirectly. Through joint participation in Curriculum Advisory Committees, faculty and employers share the responsibility of assuring contemporary and appropriate training within fields needed by local firms. This indirect involvement establishes a context that allows faculty and employers (or their relevant departments) to develop independent linkages. In these cases, employers contribute to individual faculty by helping maintain the academic relevance of the technical content of course work. Employers also contribute the opportunity for cooperative education, which faculty generally administer. In return, faculty have the chance to market their program to employers with appropriate focus on the substantive and technical aspects that the training provides.

Faculty - Placement Office Linkages. As seen in Figure 1, both the Placement Office and the faculty maintain independent sets of linkages with the two groups most interested in the training and placement process: students and employers. In general, employers have little direct opportunity to "get at" students and vice versa. These connections must, by the nature of the enterprise, be brokered by either faculty or placement officers or--ideally--by both. The figure shows that the link between the Placement Office and faculty in their respective departments is required to complete the two distinct triangles of the process, training and placement. As the preceding discussion has sought to illustrate, despite perceptions of competition, independent linkages with students and employers serve separate but complimentary purposes. In order to maximize the benefits of each set of exchanges, it is necessary to have a strong connection between faculty and placement

officers. The stability of the entire process depends on the viability of the link. Appropriate information and referrals need to be exchanged. Each party must be actively committed to maintaining the connection through cooperation with the other and coordination of independent activities. In this way both faculty and the Placement Office can proceed in doing what each is best qualified to do with respect to students and employers with the result of a tightly coordinated set of linkages directed to appropriate training and placement.

Summary of Recommendations

The relationships described in Figure V-1 represent to some extent an optimal arrangement. For some schools some of the linkages are currently absent or the content of the exchange is different from the model presented. Study findings suggest that strengthening and development of the linkages presented in the model should lead to increased graduate yields. Therefore, within the context of this model it is appropriate to make the following recommendations which if implemented should improve linkages and graduate yields.

Strengthening Placement Office/Employer Linkages:

1. Time recruiting to coincide with needs of employers. The ability to project employment needs may be restricted to large employers or employers in specialized areas of production. Given that most schools have only one recruiting season, a large segment of the employer community may not be prepared to participate.[1] Multiple recruiting periods or continuous recruiting should be considered to reach a greater number and diversity of employers.

[1]Battenburg, J.R., "Forging Links Between Industry and the Academic World," SRA Journal, Winter 1980, p. 5-11.

2. Focus recruiting on a limited number of appropriate employers. Appropriate source data should be utilized to narrow the focus of recruitment to employers, by size, location, and SIC. This would include local and state business and commerce directories, census data on occupations by industry, and records of employers currently school. A manageable number of employers (approximately 150-300) should be targeted based on the above.

3. Maintain personal contact with employers who are targeted for recruitment/placement. Personal follow-up to recruiting invitations should be conducted by the placement office or by assigned departmental faculty (e.g., by CAC membership). In this manner the employer's needs or barriers to participation can be determined; the information can serve as input to the design of recruitment and curriculum which will best suit the employer's needs. The ability to accommodate employers, share information with them and help them solve their employment problems will contribute to successful relations.

4. Facilitate recruiters' visit. For employers out of the immediate area an attempt should be made to provide information on local accommodations, etc. in order to facilitate the recruiters' visit.

5. Facilitate recruiters' selection process. An attempt should be made to provide the recruiting employers with a selection of graduates appropriate to their needs; to the extent possible, interview candidates should be pre-screened for related field, GPA, or other requirements specified by employers. Additionally, complete student credential files should be made available to recruiters (resume, transcript, fact sheet) prior to interviewing.

6. Maximize involvement of New York State Job Service. To the extent possible, the existing job service network should be utilized for developing placement opportunities for graduates; on-site job service staff should be encouraged. This will not only act to develop additional employer contacts/relations, but also to free up placement office staff to work more closely with employers and students.

Strengthening Placement Office/Student Linkages:

1. Time recruiting to coincide with the needs of students. A significant number of students in each school graduate--and thus search for jobs--at times other than the traditional spring graduation. The historical timetable for bringing prospective employees and employers together may be insufficient to assure appropriate placement for qualified candidates. Multiple recruiting periods or continuous recruiting should be considered to reach a greater number of students.

2. Maximize participation rate of eligible students in the recruitment/placement process. Students should be encouraged to participate in recruitment/placement. This can be achieved by mailings of relevant material to students with a sufficient number of credit hours, class presentations regarding recruiting/placement services and their benefits, career days for employers/students to meet, and the development of relevant and attractive materials for students on self preparation, job specifications, companies and the like.

3. Prepare students for job search/placement. Career counseling and career guidance should be provided to students early in the program. Workshops on resume preparation, interview/employment techniques should be provided to students; video feedback should be considered for training in interview techniques. Written guides on resume preparation and interview/employment techniques should be readily available to students.

Strengthening Placement Office/Alumni Linkages:

1. Maintain alumni relations. Good alumni relations can provide an important linkage with potential employers of current graduates; additionally, information on the mobility of graduates can be gained, which should be used in marketing efforts for new students and employers.

Strengthening Placement Office/Faculty Linkages:

1. Faculty should assist placement in a coordinated effort of recruitment and placement. Faculty linkages to employers are important for maintaining the employer's knowledge of curriculum and the faculty knowledge of employer's needs; this relationship is only complete with the involvement of the placement office. Faculty should be on hand during recruiting to support the hiring decision, and should be a conduit for information to placement regarding available jobs which employers may discuss.

Strengthening Faculty/Employer Linkages:

1. Increase utilization and functioning of CAC's. CAC's should serve a variety of functions--for program innovation/support, job placement, marketing, and feedback on employer/job needs. Members should be selected based on their knowledge of the field and potential use of graduates. Formal linkages should be developed to the placement and department functions. Routine contact with members should be encouraged via phone or sub-committee membership to solicit regular feedback on programs and graduates. Participation on CAC's should be encouraged by providing tangible results to members through curriculum improvement, resource exchanges, and graduate placements.

2. Increase use of cooperative education. Employer-based training of students should be encouraged if it can be demonstrated to be a cost effective method of increasing graduate yields. Evidence suggests that placement yields could be increased via cooperative education; however, any increase in the administrative cost of such programming must be weighed against increased yields to determine the cost effectiveness ratio. Demonstration programs in this area should be encouraged.

Strengthening Feedback Methods/Data to All Parties:

1. Develop inproved feedback mechanism for the recruitment/placement process. The effectiveness of various recruitment/placement methods cannot be monitored because of the lack of information regarding placement outcomes. Additional data regarding the job source (e.g., recruiting, faculty, family, friends, want ads), nature of the job, salary, etc. would provide the basis for an on-going evaluation of school procedures and curriculum.

2. Increase employer feedback regarding the use of current and future graduates. As a basis for revising current programs and adding new programs, schools should have formal methods of obtaining employer feedback. A logical channel is the CAC, under ideal conditions. To be successful, the CAC must become a more active part of the curriculum planning process, including post-placement follow-up and evaluation.

3. Increase standardization of placement data among schools. Current placement survey techniques differ dramatically among schools--preventing any real opportunity for constructive inter-school comparisons of placement outcome. As a result of poor data there are currently no standards of comparison by which institutions can measure their success, nor guidelines they can use to improve their functioning with respect to school-employer collaboration. If better data were available, innovative program techniques that are proven to be successful could be increasingly shared.

4. Develop timely reporting streams for state agency data. New York State Department of Labor and New York State of Education data should become more readily available to schools for curriculum planning. Employment and demographic projections would be useful in the continuing process of program planning and evaluation.

The recommendation identified above do not exhaust all possible factors that would contribute to maximizing the strengths and resources of the

actors ideally involved in career training and placement for technical disciplines. Final solutions must be developed in concert with administrative policy, on-going institution-employer relations and resources limitations.

In all cases, the system of coordinated effort and exchange cannot be maintained without regular assessment of performance. Perhaps the major recommendation that this study can offer is for the major parties involved in training and placement to be canvassed for feedback and evaluation purposes. Employers should be encouraged to critique career choice programs, particularly with respect to their own industries. Recruiters should evaluate the college placement process in terms of appropriateness, accessibility, cooperativeness and outcome after each trip to campus. Students should forward information to the faculty and placement office on the interviews they have and on the offers they receive (in addition to the current placement information). Faculty and placement officers should routinely exchange information on firms, students and alumni. These additional inputs will contribute significantly to an ability to control, improve and fine-tune the training-placement process.

VI. TECHNICAL APPENDIX

- Survey Instruments
- Methodology of Sample Selection

EMPLOYER FOLLOW-UP QUESTIONNAIRE

I. Content of Training

1. What are the primary skills required for this sample job title?

2. If respondent identifies more than one requirement, how would (s)he rank them in order of importance (most important first)?

3. If the primary skills required for this job include technical job skills, does the firm typically train-in-house or hire persons already trained in these skills?

II. Criteria for Employee Selection

In your decision to accept or reject job applicants for the sample job title, how would you rate the following factors in their importance to your considerations:

	Essential for Consideration	Very Important	Somewhat Important	Not Important	Not Used as Criterion
Education					
Tech. skill	____	____	____	____	____
Basic ed. skill (3 R's)	____	____	____	____	____
Personal Background					
Work habits	____	____	____	____	____
Attitude	____	____	____	____	____
Maturity	____	____	____	____	____
Commun. skill	____	____	____	____	____
Experience					
Length of prior experience	____	____	____	____	____
Appropriateness of prior exp.	____	____	____	____	____
Anticipated length of learning curve/ productivity	____	____	____	____	____

III. ACCESSIBILITY OF QUALIFIED APPLICANTS

Recruiting and Hiring Source	Q#1 1 = Frequently 2 = Occasionally 3 = Rarely 4 = Never	Q#2 1 = Very consistent 2 = Moderately consistent 3 = Somewhat consistent 4 = Not at all consistent 5 = No basis for judgment	Q#3 1 = Very high quality 2 = High quality 3 = Moderate quality 4 = Low quality 5 = No basis for judgment	Q#4 1 = Very helpful 2 = Moderately helpful 3 = Somewhat helpful 4 = Not at all helpful 5 = No basis for judgment	Q#5 1 = Makes a positive difference 2 = Moderate influence 3 = No influence 4 = Makes a negative difference 5 = No basis for judgment
Referrals					
Local advertising					
Walk-ins					
Transfers					
Community colleges					
Agric. & Tech. colleges					
Public employment agencies					
Private employment agencies					
Proprietary voc. schools					
BOCES					
CETA/JTPA					
High Schools					
Four-year colleges					
Unions					
National advertising					

Questions:

1. Hiring sources by frequency of use.
2. How consistent have you found the skill preparation you require for the sample job title to be within each source?
3. How would you evaluate the quality of the skill preparation for each of these sources in meeting your needs?
   How has the quality been? (Good or Poor). What has made it so? (Content, focus, etc.).
4. How helpful have you found each source to be in assisting you in finding qualified people who meet your needs?
   In what ways has the source been helpful (or not)--what do they do or neglect to do?
5. How does the placement assistance of each source, described above, influence the extent to which you use each source?
   How important is placement assistance in general to your hiring qualified applicants?

IV. Contract Education

1. Why do they choose to contract out

2. Rough cost estimates

3. Number of employees trained/area of training

4. How are trainees' salaries affected by the investment firm makes in training them

5. Does completion help or hinder advancement

V. Cooperative Education

1. How was decision to offer arrangement made

   a. whose idea was it?
   b. how different was the original proposal from plan implemented?

2. For how long has program operated? Content?

3. How much investment has staff made (hours of week in helping train, hiring P-T positions, etc.)?

4. What benefits does company realize from it?

5. What proportion of trainees join firm--how does their starting salary compare to employees in position who didn't coop?

6. What proportion of the positions that relate to coop training went through program?

VI. Participation in Curriculum Advisory Committees

1. Have you or any other member of your firm acted in an advisory capacity for planning occupational training programs?

2. In what ways do you serve (e.g., special committees for specific curricula, identify community employer-institution linkages, canvass similar employers for needs/suggestions/opportunities for cooperation, etc.)?

3. Details on committee (e.g., size, frequency of contact, composition).

4. What ideas do you have to make the curriculum advisory committees more effective?

Doc. #2730A April, 1984

MCC OCCUPATIONAL STUDY
TWO YEAR SCHOOL FOLLOW-UP QUESTIONNAIRE

I. On-Campus Recruitment (Placement Office) Date of Interview_____

1. Name and Title of Contact: _____
   Phone Number: _____

2. Outreach/marketing of recruitment opportunities by schools

	1981-82	1982-83	1983-84
a. How many employers were contacted about recruiting on campus?	_____	_____	_____
b. How many employers actually came (or are scheduled to come)to campus?	_____	_____	_____
c. Of the total, what proportion or number were here for the first time?	_____	_____	_____
d. Number of students interviewing with on campus recruiters?	_____	_____	_____
e. Number of interviews conducted on campus by recruiters	_____	_____	_____

f. Generally, what proportion of the recruiters come from the following geographic areas:
   1. within county_____% 3. outside area, within state_____%
   2. contigious county_____% 4. outside of state_____%

g. How are firms identified as appropriate for on campus recruitment? Explain sources used (e.g., directories, journals, recruiters). How is faculty involved?

_____
_____
_____
_____
_____
_____

h. Once firms are identified, how are they solicited for recruitment? How does geographic location (in area/out of area) affect this process?

_____
_____
_____
_____
_____
_____

i. Have you noticed any changes in the past three years in the kind (e.g., size, industry, age) of firms that recruit, or the skill areas recruited? If so, please explain.

_____
_____
_____
_____
_____
_____

I. On-Campus Recruitment (continued)

3. Procedures during recruiters' visit to campus

a. How many days do recruiters usually visit on campus per visit?

b. Has this become longer or shorter in the past three years? If so, why?

c. What is the general structure of interviewing on campus? (private interview, group interview, presentation)

d. Are resumes of applicants made available to recruiter beforehand?

e. Does the placement office screen applicants beforehand?

f. Is there any follow-up with recruiter by school personnel?

g. Who makes travel arrangements for recruiters?

4. Procedures involving students during recruitment

a. Does the placement office provide any kind of support services (counseling, training, guides) to prepare students for recruitment? If so, explain.

b. Is there any follow-up by the placement office to determine if the student received any job offers as a result of the recruitment process? (Other than Placement Survey)

5. Impact of placement procedures on recruitment

a. How many job offers resulted from interviews conducted by recruiters in 1982-83?

b. How many students received job offers from recruiters in 1982-83?

c. Of those firms recruiting here over the past three years, approximately what proportion have not scheduled return visits during that time? (i.e., what percentage came only once?)_____%

d. What reasons are generally given when an employer chooses not to return for recruitment?

I. On-Campus Recruitment (continued)

6. Departmental efforts for recruitment/placement process

a. Is there a procedure followed to solicit job leads from faculty and other department personnel? If so, what?

b. To your knowledge, do the departments provide any kind of support services to prepare students for recruitment (counseling, training, guides, etc.)? If so, explain

c. What kind of relationship (if any) exists between faculty and the placement office in the preparation of students for the recruiting process?

d. To your knowledge, do the departments conduct any follow-up with students to determine if they receive job offers? If so, in what way?

e. How are the departments involved in the placement process outside of the placement office recruitment procedure? For example, do they help in identifying other job opportunities, and if so, how?

f. To what extent do the above differ for the various disciplines of BC, DP, EM, HS?

II. Job Placement Survey (Placement Office)

1. Name and Title of contact: _____ Date: _____
   Phone Number: _____

2. Procedures for administering the job placement survey

   a. When is the questionnaire distributed?

   b. What arrangements are made for its return?

   c. Number/proportion of graduates who responded in each of the last three years?
      1981-82_____ 1982-83_____ 1983-84_____

   d. What non-response follow-up occurs?

   e. What longitudinal follow-up occurs?

   f. How is "in your field" defined?

   g. Please provide copies of questionnaires used for the last three years.

3. Please provide a copy of 1982-83 placement survey information (published placement report/internal year end report).

4. What follow-up information is available on:

   - promotions
   - rate of pay increases
   - continued schooling

5. Are commercial instruments used? If so, which?

III. Other Information (Placement Office/Research Office)

1. Within each selected discipline please indicate whether the following are provided:

	BC	DP	EM	HS
a. Internship				
b. Cooperative programming				
c. Work experience				

d. If so, please provide an example of each:

- Internship _____

- Cooperative programming _____

- Work experience _____

2. How are these opportunities identified and arranged? _____

3. Who selects students, what are criteria for selection, and what is the basis for evaluating the mutual success of the programs? _____

IV. Curriculum Advisory Committees

A. Discipline #1

1. Selected discipline: _____

2. General Information (Divisional Dean)

a. Name and Title of Contact: _____

b. Number of Committees within selected discipline: _____

c. What generally are the goals of curriculum committees: _____

d. Typical composition? _____

e. Typical frequency of meetings/adequacy of attendance? _____

f. Typical nature of leadership on committees? _____

g. General ability of committees to influence policy? _____

3. Sample Committee Information (Department Head)
For the sample committee within this discipline, please provide the following information on its purpose, structure, and impacts.

a. Name and Title of Contact: _____

b. Name of Committee _____

c. Goals _____

d. Composition (#, types) _____

IV. Curriculum Advisory Committees (continued)
A-3. (continued)

e. Frequency of meetings_____

f. Consistency of attendance_____

g. Leadership (who, how selected)_____

h. Ability of committee to influence policy_____

i. Number and content of recommendations presented within the most recent academic year_____

j. Number and content of recommendations that were implemented over the most recent academic year_____

IV. Curriculum Advisory Committees (continued)

B. Discipline #2

1. Selected discipline: _____

2. General Information (Divisional Dean)

a. Name and Title of Contact: _____

b. Number of Committees within selected discipline: _____

c. What generally are the goals of curriculum committees: _____

d. Typical composition? _____

e. Typical frequency of meetings/adequacy of attendance? _____

f. Typical nature of leadership on committees? _____

g. General ability of committees to influence policy? _____

3. Sample Committee Information (Department Head)
For the sample committee within this discipline, please provide the following information on its purpose, structure, and impacts.

a. Name and Title of Contact: _____

b. Name of Committee _____

c. Goals _____

d. Composition (#, types) _____

IV. Curriculum Advisory Committees (continued)
B-3. (continued)

e. Frequency of meetings_____

f. Consistency of attendance_____

g. Leadership (who, how selected)_____

h. Ability of committee tc influence policy_____

i. Number and content of recommendations presented within the most recent academic year_____

j. Number and content of recommendations that were implemented over the most recent academic year_____

APPENDIX
METHODOLOGY OF SAMPLE SELECTION

Using the data on employers interviewed in the first year's study, the present project sought to identify factors that were associated with high or low salary yields for associate-level salaries. Yield is intended to mean the proportional increase in salary for a technical position over a non-technical job in the same discipline. Thus, a registered nurse whose salary is one-third higher than a nurse's aide is said to have a salary yield of 33.3 percent.

As specified in the proposal for funding, it was necessary to develop a means of evaluating high and low firms with respect to associate level positions. The evaluation technique needed to be by discipline since each employer in the first year sample could not be expected to employ in all four disciplines studied or to have technical positions in each discipline in which he did employ. In order to look at high and low firms among employers by discipline, a new unit of analysis was created: the employer/discipline. For each employer there could be a minimum of one employer/discipline and a maximum of four. The original employer sample yielded 159 employer/disciplines for analysis.

For each discipline, the intent was to identify the firms whose technical salaries were significantly above or below the average yield for the discipline. To achieve this, the actual distributions were standardized (i.e., translated to Z-scores) around a mean of zero and standard deviation of one, using the following approach:

$$Zij = \frac{(Xij - \mu i)}{\sigma i}$$

Where i = discipline,
j = employer,
μ = sample discipline yield average
X = employer/discipline yield
σ = sample discipline standard deviation

By adopting the exclusion criterion of $|Z| \geq 1$, only those firms that were in the top and bottom 15 percent of the distribution were selected for further study.

Three distributions were considered:

1. Individual job titles at the associate level within each discipline
2. Average associate salary by employer within each discipline
3. Salary yields for technical (associates) positions

The second and third distributions formed the basis for identifying the follow-up sample. Joint consideration of the two distributions was deemed appropriate when it was revealed that for one of the disciplines, the average associate salaries were so closely clustered that only one firm deviated significantly from the mean. Joint consideration was also desirable on theoretical grounds. The focus of the present research was to identify factors associated with high or low yields in associate level salaries. Average associate starting salary by discipline in one important component to consider. Effective yield of associate salaries over high school salaries is another.

Additional compilations of first year sample firms offering contractual education and/or cooperative education were examined; those that were included in the two distributions described were identified. Geographic location and size of employment of each firm were also considered.

ERIC Clearinghouse for Junior Colleges
8118 Math-Sciences Building
University of California
Los Angeles, California 90024

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